

WE CLAIM:

1. A process for the catalytic selective oxidation of sulfur compounds in a hydrocarbonaceous feedstock to sulfur dioxide, comprising the steps of:  
contacting a gaseous feed mixture of the hydrocarbonaceous feedstock and a molecular-oxygen containing gas with a catalyst at a temperature of at most 500 °C, said catalyst comprising a group VIII noble metal on a catalyst carrier, said feed mixture having oxygen-to-carbon ratio of below 0.15.
2. The process of claim 1 wherein the oxygen-to-carbon ratio of the feed mixture is below 0.10.
3. The process of claim 1 wherein the catalyst carrier is a refractory oxide.
4. The process of claim 3 wherein the refractory oxide comprises partially stabilised or stabilised zirconia.
5. The process of claim 1 wherein the group VIII noble metal is Pt, Rh or Ir or a combination of two or more thereof.
6. The process of claim 5 wherein the oxygen-to-carbon ratio of the feed mixture is below 0.10.
7. The process of claim 5 wherein the catalyst carrier is a refractory oxide.
8. The process of claim 7 wherein the refractory oxide comprises partially stabilised or stabilised zirconia.
9. The process of claim 1 wherein the temperature is maintained in the range of from 200 to 500°C.
10. The process of claim 1 wherein the temperature is maintained in the range of from 200 to 300°C.

11. The process of claim 1 wherein the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 10 bar (absolute).
12. The process of claim 11 wherein the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 5 bar (absolute).
13. The process of claim 1 wherein the feed mixture is contacted with the catalyst at ambient pressure.
14. The process of claim 1 wherein the hydrocarbonaceous feedstock is a gaseous hydrocarbonaceous feedstock.
15. The process of claim 14 wherein the hydrocarbonaceous feedstock is methane or natural gas.
16. The process of claim 14 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.
17. The process of claim 16 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.
18. The process of claim 15 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.
19. The process of claim 18 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.
20. The process of claim 1 wherein the feedstock is a liquid hydrocarbonaceous feedstock containing at most 1000 ppmw sulfur.
21. A process for the catalytic selective oxidation of sulfur compounds in a methane or natural gas feedstock to sulfur dioxide, comprising the steps of: contacting a gaseous feed mixture of the methane or natural gas feedstock and a molecular-oxygen

containing gas with a catalyst at a temperature of at most 500 °C, said catalyst comprising a group VIII noble metal on a refractory oxide, said feed mixture having oxygen-to-carbon ratio of below 0.15.

22. The process of claim 21 wherein the group VIII noble metal is Pt, Rh or Ir or a combination of two or more thereof.

23. The process of claim 21 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.

24. The process of claim 23 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

25. A process for the desulfurization of a hydrocarbonaceous feedstock comprising the steps of: contacting a gaseous feed mixture of the hydrocarbonaceous feedstock and a molecular-oxygen containing gas with a catalyst at a temperature of at most 500 °C, said catalyst comprising a group VIII noble metal on a catalyst carrier, said feed mixture having oxygen-to-carbon ratio of below 0.15, thereby selectively oxidizing sulfur compounds in the hydrocarbonaceous feedstock to sulfur dioxide; and removing the thus-formed sulfur dioxide from the hydrocarbonaceous feedstock.

26. The process of claim 25 wherein the oxygen-to-carbon ratio of the feed mixture is below 0.10.

27. The process of claim 25 wherein the catalyst carrier is a refractory oxide.

28. The process of claim 27 wherein the refractory oxide comprises partially stabilised or stabilised zirconia.

29. The process of claim 25 wherein the group VIII noble metal is Pt, Rh or Ir or a combination of two or more thereof.
30. The process of claim 29 wherein the oxygen-to-carbon ratio of the feed mixture is below 0.10.
31. The process of claim 29 wherein the catalyst carrier is a refractory oxide.
32. The process of claim 31 wherein the refractory oxide comprises partially stabilised or stabilised zirconia.
33. The process of claim 25 wherein the temperature is maintained in the range of from 200 to 500°C.
34. The process of claim 25 wherein the temperature is maintained in the range of from 200 to 300°C.
35. The process of claim 25 wherein the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 10 bar (absolute).
36. The process of claim 35 wherein the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 5 bar (absolute).
37. The process of claim 25 wherein the feed mixture is contacted with the catalyst at ambient pressure.
38. The process of claim 25 wherein the hydrocarbonaceous feedstock is a gaseous hydrocarbonaceous feedstock.
39. The process of claim 38 wherein the hydrocarbonaceous feedstock is methane or natural gas.
40. The process of claim 38 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.
41. The process of claim 40 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

42. The process of claim 39 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.

43. The process of claim 42 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

44. The process of claim 25 wherein the feedstock is a liquid hydrocarbonaceous feedstock containing at most 1000 ppmw sulfur.